

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-14 (canceled)

Claim 15 (currently amended): A method for producing a refined microstructure of a metallic material, ~~and shifting a refined material to a periphery of a closed to yield the refined material concentrated in an end portion of the metallic material, comprising:~~ comprising:

~~subjecting the solidifying a molten metallic material to a solidification process at temperatures lower than a liquidus of the molten metallic material; and applying an electric current and a magnetic field simultaneously to the solidifying metallic material during a solidification process at temperatures lower than the liquidus of the molten metallic material to crush solid crystal particles of the solidifying metallic material into small pieces solid crystals of the metallic material generated during the solidification process and to shift such that the small pieces are shifted to a periphery of the metallic material in the closed a cylindrical tube or container[[; and]] to yield said refined microstructure of the metallic material concentrated in the periphery of the cylindrical tube or container,~~

wherein said cylindrical tube or container is disposed such that an axial direction thereof is orthogonal to the magnetic field

~~yielding a refined microstructure of the metallic material concentrated in the end portion of the metallic material in the closed container.~~

Claims 16-17 (canceled)

Claim 18 (currently amended): The method of Claim 15, wherein the applying further comprises applying the electric current and the magnetic field ~~are applied simultaneously to the metallic material at temperatures lower than liquidus thereof during last stages of the solidification process~~ solidifying of the solidifying metallic material.

Claim 19 (canceled)